-continued

<400> SEQUENCE: 19

uugccaugug uaugugggcu uacgcugagu acuucgauu 39

1.-45. (canceled)

46. A method of treating a brain tumor in a subject having or at risk of developing a brain tumor, the method comprising administering to the subject a therapeutically effective amount of a composition comprising an artificial RNA nanostructure molecule, wherein the molecule comprises a multiple branched RNA junction motif comprising at least one RNA oligonucleotide, and a brain tumor targeting module, wherein the module is coupled to an RNA junction motif, wherein the multiple branched RNA comprises a nucleotide sequence 5'-UUG CCA UGU GUA UGU GGG AUC CCG CGG CCA UGG CGG CCG GGA G-3' (SEQ ID NO: 6) or 5'-GATAAGCT CTC CCG GCC GCC ATG GCC GCG GGA T-3' (SEQ ID NO: 7).

47. A method of preventing brain tumor recurrence in a subject having or at risk of having brain tumor recurrence, the method comprising administering to the subject a therapeutically effective amount of a composition comprising an artificial RNA nanostructure molecule, wherein the molecule comprises a multiple branched RNA junction motif comprising at least one RNA oligonucleotide, and a brain tumor targeting module, wherein the module is coupled to an RNA junction motif wherein the multiple branched RNA comprises a nucleotide sequence 5'-UUG CCA UGU GUA UGU GGG AUC CCG CGG CCA UGG CGG CCG GGA G-3' (SEQ ID NO: 6) or 5'-GATAAGCT CTC CCG GCC GCC ATG GCC GCG GGA T-3' (SEQ ID NO: 7).

48. The method of claim 46, wherein the composition further comprises a pharmaceutically acceptable carrier.

49. The method of claim 46, wherein the subject is a mammal or a non-mammal vertebrate.

50. The method of claim 46, wherein the subject is a human.

51. The method of claim 46, wherein the brain tumor is glioblastoma.

52. The method of claim 46, wherein the molecule further comprises at least one bioactive agent coupled to the RNA junction motif.

53. The method of claim 46, wherein the RNA oligonucleotide comprises at least one chemical modification at the 2' position.

54. The method of claim 53, wherein the modification comprises 2' Fluoro, 2' Amine, 2' O-Methyl, or a combination thereof

55. The method of claim 46, wherein the motif is a three-branched RNA junction motif

56. The method of claim 46, wherein the diameter of the molecule is at least about 40 nm or less.

57. The method of claim 46, wherein the molecule has a zeta potential ranging from about −50 m V to about 50 m V.

58. The method of claim 55, wherein a branch of the three-branched RNA junction motif comprises an a3WJ RNA module (SEQ ID NO: 1); a b3WJ RNA module (SEQ ID NO: 2); a c3WJ RNA module (SEQ ID NO: 3); or a combination thereof.

59. The method of claim 46, wherein RNA oligonucleotides comprises at least 6 nucleotides in length.

60. The method of claim 46, wherein the brain tumor targeting module comprises a ligand that binds to at least one brain tumor cell surface marker.

61. The method of claim 60, wherein the ligand binds to a folate receptor, an EGFR, a transferrin receptor, an RGD, or a combination thereof.

62. The method of claim 60, wherein the ligand comprises an aptamer.

63. The method of claim 62, wherein the aptamer binds to EGFR, PDGFR, folate receptor, or a combination thereof.

64. The method of claim 46, wherein the targeting module comprises a folate.

65. The method of claim 52, wherein the bioactive agent comprises a drug, a therapeutic agent, a fluorescent dye, a chemical, an siRNA, an miRNA, an anti-miRNA, a ribozyme RNA, an antisense RNA or a combination thereof.

66. The method of claim 52, wherein the bioactive agent is directed to a brain tumor marker.

67. The method of claim 65, the microRNA sequence is at least 6 nucleotide in length.

68. The method of claim 65, wherein the bioactive agent is an anti-miRNA molecule for a miRNA comprising miR-9, miR-10b, miR-21, miR-17, or miR-26.

69. The method of claim 65, wherein the bioactive agent is a miRNA molecule for a miRNA comprising let-7a, miR-10b, miR-25, miR-34a, miR-124, miR-145, or miR-181b.

70. The method of claim 68, wherein the anti-miRNA comprises an anti-miRNA locked nucleic acid (LNA) molecule.

71. The method of claim 68, wherein the anti-miRNA LNA molecule comprises sequence 5'- GATAAGCT-3',5'-AGCACTTT-3', or 5'-ATTTGCAC-3'.

72. The method of claim 65, wherein the siRNA binds to an mRNA molecule encodes a protein comprising VEGF, EGFR, POK, AKT, AGT, RAF, RAS, MAPK, ERK, MGMT, MMP-2, MMP-9, PDGF, PDGFR, IGF-1, HGF, mTOR, Cox-2 or TGFβ1.

73. The method of claim 65, wherein the siRNA binds to a mRNA molecule that encodes RAS, cMET, HER2, MDM2, PIK3CA, AKT, CDK4, or a combination thereof

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